Foresight of OSH
new & emerging risks (NERs)
arising from new technologies

Shaping the future of OSH:
A workshop on Foresight methodologies
Bilbao, 27-28 October 2008

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http://osha.europa.eu
Overview

- The Agency and its European Risk Observatory (ERO)
- Expert forecasts of OSH emerging risks (2002-2006)
- Foresight of OSH New & Emerging Risks (from 2009)
European Agency for Safety and Health at Work

Established in 1996 in Bilbao, Spain
The Agency’s mission

- To help improve working conditions in the EU by collecting, analysing, promoting and communicating technical, scientific and economic information related to OSH to Community bodies, Member States, the social partners and all those involved in the field of OSH

- The Agency is a tripartite organisation and brings together representatives from:
  - governments, employers’ and workers’ organisations
  - as well as from the European Commission
How do we work?

1. Identify safety and health issues related to the Changing World of Work, Anticipate Emerging Risks, Coordinate research into the issues
   - The European Risk Observatory Unit

2. Identify practical approaches to dealing with the issues
   - Working Environment Information Unit

3. Disseminate the information
   - Communication & Promotion Unit
A network Agency: Focal Points
Global network of the Agency

- European Agency
- Partner International Organisations
- Partner countries
- Under discussion
European Risk Observatory (ERO)

- **Aim**: the identification of emerging risks
- **Analyse trends**, anticipate changes in the world of work and their possible effects on OSH
- **Stimulating reflection** among the Agency’s stakeholders and providing a platform for debate
2002-2006: asked the Agency “to anticipate risks and bring them under control” and “to create a European Risk Observatory (ERO), to provide forward-looking information for policy-makers”

2007-2012: the ERO should contribute to enhancing risk anticipation
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Emerging risks: “New and increasing risks”

“New” if:

- A completely new risk
New risks...?
Emerging risks: “New and increasing risks”

“New” if:

- A completely new risk, or
- A long-standing issue newly considered a risk due to a change in public perception, or
- New scientific knowledge leads a long-standing issue to be identified as a risk.
“New and increasing risks”

“Increasing” if...

- The number of hazards leading to the risk is growing, or
- There is a higher likelihood of exposure to those hazards, or
- The harm caused is worsening (in severity, or in numbers affected)
Expert forecasts of ERs: Delphi surveys

4 Delphi surveys
(physical, chemical, biological & psychosocial risks):

520 experts invited to participate

Round 1: Identification of issues

Round 2: Validation and prioritisation

Round 3: Final consultation

Forecast by 188 experts (RR=35%):
prioritised lists of ERs
Examples of emerging risks identified

- Nanoparticles and ultrafine particles
  - They can enter the body but the degree of damage they can cause is still unknown

- Lack of physical activity
  - Prolonged sitting: ↑ use of PCs, automation, sedentary lifestyle
  - ↑ MSDs, varicose veins and deep-vein thrombosis, obesity

- Combined exposure to MSD and psychosocial risk factors
  - Job demand, time pressure, low job control, low decision level, poor support from colleagues, job insecurity, bullying:
    - ↑ the effects of physical risk factors and ↑ MSDs

- Difficulties in assessing workers’ exposure to chemicals:
  - Especially in SMEs – 99.8% of all enterprises (EU-25, 2003)
  - ↑ subcontracted activities, whereby subcontracted workers are less aware of chemical risks and hence more vulnerable

- OSH risks linked to pandemics and the ↑ in drug-resistant pathogens (resistant tuberculosis, MRSA)
All this information is available from the ERO website

http://riskobservatory.osha.europa.eu/

European Risk Observatory (ERO)

More and more people face psychosocial risks at work

Precarious contracts and work intensification, high emotional violence and a poor work-life balance can lead to work-related risks that put EU workers in danger.

- Learn more about stress at work
- Read the press release on psychosocial risks

Nanotechnologies and Occupational Health and Safety

The rapid growth of nanotechnology (leading to the development of new materials, devices and processes) is outstripping our understanding and knowledge of the occupational health risks associated with manufacturing and using nanomaterials. Exposure to these materials during manufacturing and use may occur through inhalation, dermal contact and ingestion. Occupational health risks associated with manufacturing and using nanomaterials are not yet clearly understood.

See the Agency’s collection of recent research information on nanotechnologies and possible impacts on workplaces.

New biological threats in European working environment

Several thousand fatalities in the EU are due to work-related infectious diseases. Many biological risks remain poorly assessed at workplace level. Read on emerging biological risks that are most likely to affect EU workers.

- Read the press release on new biological threats
- Read the expert forecast on emerging biological risks

Print publications advertised here

Web features on important topics

Emerging Risks
- Overview
- Introduction
- Published Information
- Expert forecasts
- Additional sources

Monitoring Systems
- Introduction
- EU Systems
- List by System
- List by country

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News
- NL - First outbreak of MRSA ST398 in a Dutch hospital - 5 healthcare workers colonised
- 04.03.2008
- EU - Nanosafe2 issues a report on explosivity and flammability of nanopowders
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Community Strategy for OSH 2007 – 2012:

The ERO should contribute to enhancing “risk anticipation to include risks associated with new technologies”

The ERO’s answer:

A foresight of key technological innovations likely to have an impact on OSH working conditions - looking at the positive and negative influences - taking into account the demographic, scientific, societal, economic, etc., context:

- socio-economic trends which affect the labour market
- trends in public attitude towards risks
- national, European and international political agendas, including globalisation, etc.
Became common as of 2005

Does not demand consensus and does not assume that the future is pre-determined (unlike forecasting)

Looks forward to anticipate, prepare wisely for the future

Tool for developing visions of possible futures that actions today can help avoid or happen

The future can evolve in different directions, which can be shaped by the actions of various players and the decisions taken today.

Embraces activities of:

- critical thinking concerning long-term developments;
- debate and effort to create wider participation in decisions;
- shaping the future, especially by influencing public policy and strategic decisions
Timeline: Step-wise implementation

- **27-28 October 2008: Preparatory workshop**
  - Obtain the foresight experts’ views on pros & cons of foresight methods used at national/EU/international levels
  - Consolidate a methodology proposal for the Agency’s foresight

- **End 2008: Validation of methodology – EROAG/Bureau**

- **2009-2010: 1st foresight on technological innovations**

- **2011: Evaluation, preparation of next foresight**

- **2012-2013: 2nd foresight – specific topic, sector, group?**

- **2014: Evaluation and preparation of next foresight**

- **Etc.**
Methodology proposal: scenarios development

- May incorporate qualitative and quantitative aspects
- Encourages the involvement of a wide range of views in order to assemble different versions of the future
  - Need participants from several disciplines also outside OSH, such as economists, demographers, policy-makers, physicians, industry, etc.
- Our stakeholders will be involved in all steps
The scenarios will aim at answering the following question:

■ How will the introduction of new technologies into the workplaces influence the future of OSH over a 10-year time horizon; and

■ what will be the new and emerging OSH risks resulting from these new technologies in 2020?
Proposal: 3 steps

- **Step 1**: Identification of key technological innovations likely to impact on OSH in 10 years
- **Step 2**: Identification of key drivers of “contextual” changes - socio-cultural, economic, political, environmental - that could interact with the emergence of the key technological innovations
- **Step 3**: Developing plausible and consistent scenarios on how the key tech. innovations may evolve in the context of the changes induced by the key drivers, and may impact on OSH – positively/ negatively – and create NERs.
Step 1: Identification of key technological innovations likely to impact on OSH in 10 years

- Draft list of potential future technologies
  - Review of existing technology foresights and literature

- Complementing the list
  - Experts’ interviews / brainstorming workshop(s)

- Drafting the profile of the technologies identified
  - Experts’ interviews or “deskwork”

- Selection of the key technological innovations
  - Delphi-like survey? Two possible criteria for ranking:
    - “certainty” that the technology will exist in 10 years
    - “importance” of its impact on the world of work
Step 2: Identification of key drivers of changes

“The problems we face cannot be correctly understood if reduced to one dimension [...]. Instead, Foresight provides an approach that captures realities in their totality with all the variables influencing them, regardless of the type.” *

Aim: Identify all contextual factors - socio-cultural, economic, political, environmental, etc. – that could interact with the emergence of the key technologies

Method: Same procedure as in step 1
- Draft list of drivers of change
- Complementing the list
- Draft short descriptions of the drivers identified
- Selection of the key drivers of change

Step 3: Development of scenarios

To develop one set of plausible and consistent scenarios for each key technology selected in step 1, describing how the key technology may evolve:

- in the perspective of the contextual changes induced by the key drivers of changes, and
- how this may impact on OSH
- and create NERs

3 sub-steps:

a. Defining the scenarios’ outline
b. Selecting the most worthy scenarios
c. Constructing the scenarios
Step 3-a. Scenario outline

- Setting the frame of the possible scenarios for each key technology ("drivers matrix")

The number of possible scenarios is obtained by envisaging the possible states for each key driver and combine those with each other:

- Example: 2 possible states for key driver "migration": "increase" and "decrease"
- If 5 key drivers were selected in step 2 ⇒ 32 possible scenarios for each key technology
- If 5 key technologies were selected in step 1 ⇒ 160 possible scenarios!

- By a restricted "core group"?
Step 3-b. Selecting the most worthy scenarios

➢ To be effective, scenarios must be plausible, consistent and offer insights into the future:
  ■ Plausibility: it must fall within the limits of what might conceivably happen.
  ■ Internal consistency: the combination of logics in a scenario must not have any built-in inconsistency that could undermine its credibility.
  ■ Decision-making utility: each scenario should contribute to specific insights into the future.

➢ Typically only three to five scenarios per key technology

➢ Selected in “Core group”? Survey? Workshop?
Step 3-c. Constructing the “worthy” scenarios

- One workshop per key technology
  How would society, workplaces, relationships, etc.? What would be the OSH implications? What risks for workers?

- Writing the scenarios:
  - A highly descriptive title:
    - short enough to be memorable;
    - descriptive enough to be transmitting the essence of what is happening in the scenario.
  - Compelling 'story-lines':
    the scenario should tell a story that should be remarkable, convincing, logical, and plausible.
Questions for the workshop

- The scope of the foresight: should we narrow it down to a specific type of technologies (e.g. ICT), a specific sector (e.g. transports, or a specific manufacturing sector)?

- The methodology:
  - Scenario building: an appropriate method to answer our question?
  - What are the best instruments for the sub-steps?

- The participants:
  - What should be their background/expertise?
  - How to identify them?

- Time frame and resources:
  - Is the timeline proposed realistic?
  - What are the necessary human /financial resources?
Thank you for your attention!

http://osha.europa.eu/
http://riskobservatory.osha.europa.eu/